Wireless Switch

WS5000 Series

WS5100 Installation Guide

symbol®
The Enterprise Mobility Company™

WS5000 Series, WS5100 Installation Guide

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1 Introduction

The Symbol **WS5100** Wireless Switch is the high-performance member of Symbol's **WS5000 Series** family. The WS5100, which is built on the same award-winning hardware and software architecture as the WS5000 platform, provides centralized Wireless LAN (WLAN) configuration and management by coalescing the network "intelligence" that was previously spread across physically distributed access points. By replacing access points with simpler access ports (or "thin" access points), the WS5100 becomes the single point of contact with the WLAN thus reducing, the complexity of wireless networking by moving management out of the ceiling and into the wiring closet. In addition, through the use of Symbol's patented Virtual AP architecture, the WS5100 lets you create multiple WLANs without changing or adding to the existing wired network infrastructure.

This document is written for the network device installer.

1.1 Package Contents

Inspect the package contents and report any missing or damaged items to your sales representative. The package should contain the following:

- WS5100 Wireless Switch
- ***WS5100 Installation Guide*** (this document)
- Rack-mounting brackets (2)
- Mounting screws (4)
- Console cable
- WS5100 product CD

1.2 Document Conventions

The following graphical alerts are used in this document to indicate notable situations:

NOTE Tips, hints, or special requirements that you should take note of.

CAUTION Care is required. Disregarding a caution can result in data loss or equipment malfunction.

WARNING! Indicates a condition or procedure that could result in personal injury or equipment damage.

1.3 Warnings

- Read all installation instructions and site survey reports, and verify correct equipment installation before connecting the system to its power source.
- Remove jewelry and watches before installing this equipment.
- Install the equipment in a rack with adequate dimensions and weight allowances.
- Verify that the rack is anchored and cannot tip over or break away from its mountings.
- Verify that the unit is grounded before connecting it to the power source.
- Verify that any device connected to this unit is properly wired and grounded.
- Connect all power cords to a properly wired and grounded electrical circuit.
- Verify that the electrical circuits have appropriate overload protection.
- Attach only approved power cords to the device.
- Symbol Technologies strongly recommends the use of an Uninterruptible Power Supply (UPS) that supports the WS5100 power rating. Not using a UPS can result in data loss or equipment damage due to a power surge or power failure.
- Verify that the power connector and socket are accessible at all times during the operation of the equipment.
- Do not work with power circuits in dimly lit spaces.
- Do not install this equipment or work with its power circuits during thunderstorms or other weather conditions that could cause a power surge.
- Verify that there is adequate ventilation around the device, and that ambient temperatures meet equipment operation specifications.

1.4 Site Preparation

- Consult your site survey and network analysis reports to determine specific equipment placement, port capacity, power drops, and so on.
- Assign installation responsibility to the appropriate personnel.
- Identify where all installed components are located.
- Verify appropriate rack mounting requirements.
- Provide a sufficient number of power drops for your equipment.
- Ensure adequate, dust-free ventilation to all installed equipment.
- Identify and prepare Ethernet and console port connections.
- Verify that cable lengths are within the maximum allowable distances for optimal signal transmission.
- Verify that the WS5100 is powered through an Uninterruptible Power Supply (UPS).

2 Specifications

2.1 Physical Specifications

Width	48.1 cm / 18.93 in. (with mounting brackets) 42.9 cm / 16.89 in. (without mounting brackets)
Height	4.39 cm / 1.73 in.
Depth	40.46 cm / 15.93 in.
Weight	6.25 kg / 13.75 lbs.
Max Power Consumption	100 VAC, 50/60 Hz, 3A 240 VAC, 50/60 Hz, 1.5A
Operating Temperature	10°C - 35°C / 50°F - 95°F
Operating Humidity	5% - 85% without condensation

2.2 Power Cord Specifications

A power cord is not supplied with the device. Use only a correctly rated power cord that's certified, as appropriate, for the country of operation.

2.2.1 Power Protection

- **If possible, use a circuit that is dedicated to data processing equipment.** Commercial electrical contractors are familiar with wiring for data processing equipment and can help with the load balancing of these circuits.
- **Install surge protection.** Be sure to use a surge protection device between the electricity source and the WS5100.
- **Install an Uninterruptible Power Supply (UPS)**. A UPS provides continuous power during a power outage. Some UPS devices have integral surge protection. UPS equipment requires periodic maintenance to ensure reliability. A UPS of the proper capacity for the data processing equipment must be purchased.

2.3 Cable Requirements

To connect the WS5100 to the LAN and the WLAN, you'll need two Category 6 Ethernet cables (not supplied), one for each of the two Ethernet ports on the front panel of the device.

To connect the WS5100 to a computer that's running a serial terminal emulator program (the "configuration computer"), you need the console cable that's supplied with the device. You'll use the terminal emulator program to access the switch's Command Line Interface (CLI) through which you'll perform initial configuration (as described in "**Preliminary Configuration through the CLI**" on page 10).

2.4 LED Codes

The WS5100 has two vertically-stacked LEDs on its front panel. The LEDs display three colors (blue, amber, and red), and three lit states (solid, blinking, and off). The following tables decode the combinations of LED colors and states.

2.4.1 Start Up

Event	Top LED	Bottom LED
Power off	Off	Off
Power On Self Test (POST) running	All colors in rotation	All colors in rotation
POST succeeded	Blue solid	Blue solid
Software initializing	Blue solid	Off
Software initialized	Blue blinking	Off

2.4.2 Configured as a Primary Switch

Event	Top LED	Bottom LED
Active	Blue blinking	Blue solid
Monitoring	Blue blinking	Amber solid
Standby missing or not enabled	Blue blinking	Off
Inactive	Amber blinking	Blue blinking

2.4.3 Configured as a Standby Switch

Event	Top LED	Bottom LED
Active (acting as primary)	Blue blinking	Blue blinking
Monitoring	Blue blinking	Amber solid

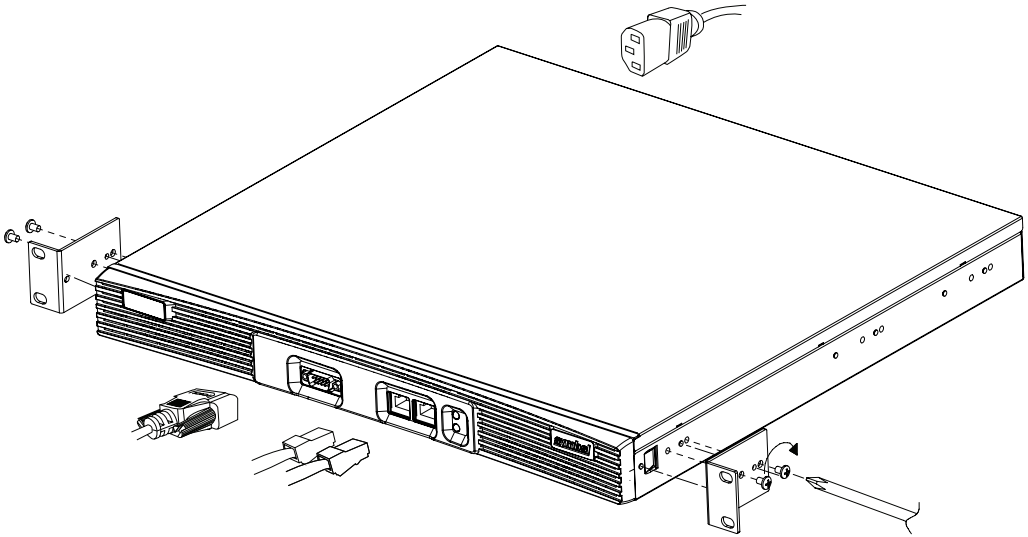
Event	Top LED	Bottom LED
Standby not enabled	Blue blinking	Off
Inactive	Amber blinking	Amber blinking

2.4.4 Error Codes

Event	Top LED	Bottom LED
POST failed (critical error)	Red blinking	Red blinking
Software initialization failed	Amber solid	Off
Country code not configured. **Note:** *During first time setup, the LEDs will remain in this state until the country code is configured.*	Amber solid	Amber blinking
No access ports have been adopted	Blue blinking	Amber blinking
Primary inactive or failed	Amber blinking	Blue blinking

3 Hardware Setup

3.1 Installing the WS5100

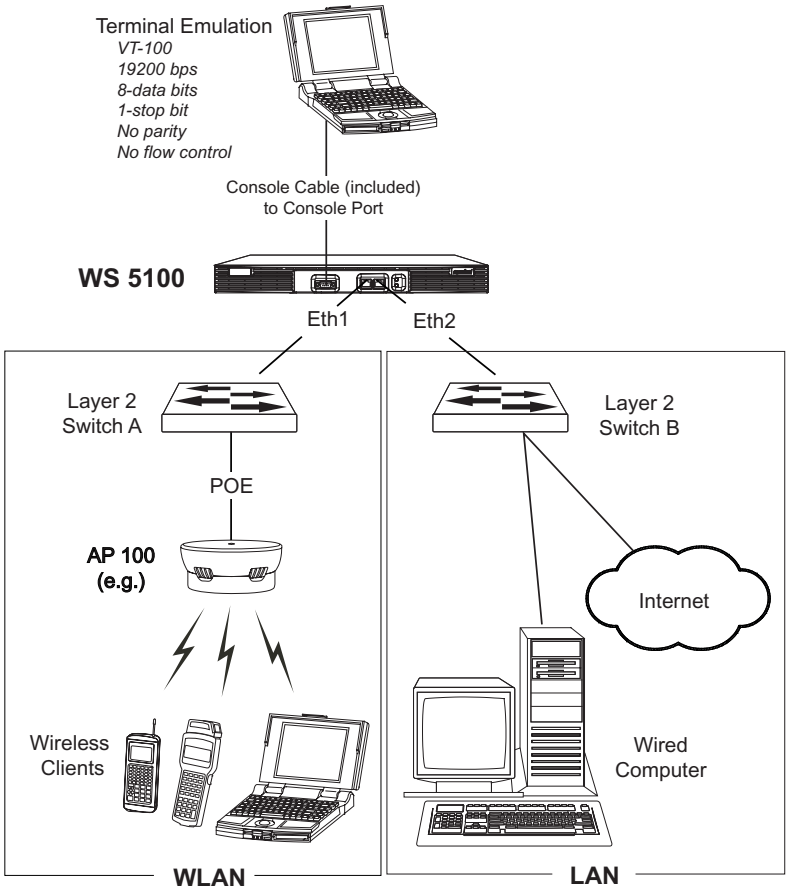


To install the WS5100 switch in a rack:

1. Attach the rack brackets to the sides of the device. The rack brackets are ambidextrous.
2. Attach the brackets to the rack.

3.2 Adding the WS5100 to the Network

The WS5100 fits in the distribution layer of the existing wired network, and must have OSI Layer 2 connectivity with the access ports it needs to adopt. The following illustration shows the major components of a WS5100 network deployment.



As shown in the illustration, all wireless devices are connected to the WS5100 through **Switch A** and all wired devices are connected through **Switch B**.

To add the WS5100 to the wired and wireless networks, and prepare it for initial configuration, follow these steps:

1. Using a Category 6 Ethernet cable, connect a LAN switch (**Switch A**) to the **Eth1** Ethernet port (the left port) on the front panel of the WS5100.
2. Add your access port(s) to the WLAN.
3. Using a Category 6 Ethernet cable, connect another LAN switch (**Switch B**) to the **Eth2** Ethernet port (the right port) on the front panel of the WS5100.

4. Using the supplied console cable, connect the WS5100 serial port to an RS-232 (DB-9) serial port on a separate computer (the "configuration computer").
5. On the configuration computer, configure a terminal emulation application (such as **HyperTerminal**) as follows:

Terminal Type	VT-100
Port	COM 1-4 (depending on which COM port you're using.)
Terminal Settings	19200 bps transfer rate 8 data bits no parity 1 stop bit no flow control no hardware compression

The WS5100 does not need to be fully deployed into the wired or wireless network to complete the installation steps outlined in "**Preliminary Configuration through the CLI**" on page 10.

3.3 Supplying Power to the WS5100

1. Verify that the WS5100 power switch is off before connecting the AC power cord.
2. Plug an approved AC power cord into the power connector at the back of the WS5100.
3. Plug the cord into a standard AC outlet with a voltage range of 100 to 240 VAC.
4. Toggle the power switch (at the back of the WS5100) to the On position.

WARNING! An improper shutdown can render the WS5100 inoperable such that it may require service by Symbol Support. Please do not remove AC power or turn off the WS5100 (by toggling the on/off switch on the back of the device) without first following the shutdown procedure described in "**Shutting Down the WS5100**" on page 24. An abrupt loss of power can corrupt the information stored on the device.

3.4 Verifying the Installation

View the LEDs on the front panel of the WS5100 to ensure the device is functioning properly. The normal LED pattern follows this path:

- During the Power On Self Test (POST), the two LEDs cycle through all three colors (blue, amber, red).
- If the POST test fails, both LEDs will eventually blink red. If the POST test succeeds, the LEDs will be (momentarily) lit solid blue.
- As the software is initialized, the top LED will be solid blue, and the bottom LED will be unlit.
- After the software has finished initializing, the top LED will be solid amber, and the bottom LED will blink amber. The WS5100 is ready to be configured, as described in the next chapter.

Other LED codes indicate the presence (or absence) of access ports, different standby states, and so on. A guide to the WS5100 LEDs codes is provided in "**LED Codes**" on page 4.

4 Preliminary Configuration through the CLI

Most of the practical configuration of the WS5100 is performed through the **Quick Start View** applet. However, to access the applet you first have to use the Command Line Interface (CLI) to configure the Ethernet port that connects the switch to the wired LAN.

Before proceeding with the CLI instructions described below, connect a configuration computer to the WS5100, as described in "**Adding the WS5100 to the Network**" on page 6. Keep in mind the switch doesn't have to be deployed into the network to perform this initial configuration.

4.1 Typographical Conventions

The following typographical conventions apply to the CLI examples:

- The CLI prompt and output are shown as `unbolded`.
- Text that you enter verbatim is **`bold`**.
- Values that you "make up" (as command parameters) are in ***`bold italics`***.

For example:

```
ws5000.(Cfg).Ethernet.[2]>set gateway w.x.y.z
```

Here, everything up to and including the ">" is part of the CLI prompt; **`set gateway`** is a CLI command; ***`w.x.y.z`*** is a value you create (or otherwise obtain) as appropriate for your network.

4.2 Logging Into the CLI

After you've connected the WS5100 through the serial port and powered on the switch, the terminal emulation window displays a series of inscrutable diagnostic messages (which you can ignore), after which it will display the WS5000 Series user name prompt. Use the name cli to continue:

```
user name: cli
```

NOTE If the user name prompt isn't displayed, press **Enter** until it appears.

Next, you'll be taken to the CLI login. Log in as **`admin`** with the password **`symbol`**:

```
Symbol Wireless Switch WS 5000 Series.
Please enter your username and password to access the
Command Line Interface.
userid: admin
password: ******
Retrieving user and system information...
Setting user permissions flags..
Checking KDC access permissions...
Welcome...
Creating the Event list...
System information...
System Name                    : WS5000
Description                    : WS5000 Wireless Network
Switch Location                :
Software Ver.                  : 2.1.0.0-0xxx
Licensed to                    : Symbol Technologies
Copyright                      : Copyright (c) 2000-2006.  All
rights reserved.
Serial Number                  : 00A0F8545254
Number of Licenses             : 48
Max Access Ports               : 48
Max Mobile Clients             : 4096
MU Idle Timeout value          : 1800  seconds
Active Switch Policy           : symbol2006
Emergency Switch Policy        : Not defined
Switch Uptime                  : 00d:00h:35m
Global RF stats                : Disabled
# of Unassigned Access Ports   : 0
CLI AutoInstall Status         : Enabled
WS5000>
```

Compare the value of the "**`Software Ver.`**" field to the value on the Symbol Website at:

http://www.symbol.com/services/downloads/download_switchwireless.html

If the Website software is newer (if the 2.*x.y.z-nnnA* number on the Website is alphanumerically greater than your version), download and install the newer version by following the instructions on the Website.

4.3 Disable DHCP on the Wired LAN Port

To perform the initial configuration, disable DHCP on the Ethernet port that connects to the wired LAN. Connect to the LAN through either Ethernet port; by convention, and as used throughout this document, Ethernet port 2 is used as the wired LAN port.

By default, DHCP is enabled on Ethernet port 2. Disable DHCP on the port by entering the **`Ethernet.[2]`** context and issuing the **`set dhcp disable`** command:

```
WS5000>cfg ethernet 2
WS5000.(Cfg).Ethernet.[2]>set dhcp disable
```

After you disable DHCP, information about Ethernet port 2 is listed. In this listing, **`DHCP Status`** should be given as **`Disable`**:

```
WS5000.(Cfg).Ethernet.[2]> set dhcp disable
Configuring Ethernet port...
Status: Success.

Ethernet Port information:
Name                          : Ethernet 2
Network Interface Card #      : 2
Description                   : Ethernet Adapter
MAC Address                   : 00:10:C6:15:91:1F
Status                        : Enable
Online                        : No
Configured Mode               : auto
Negotiated Mode - Duplex      : Half
Negotiated Mode - Speed       : 10
DHCP status                   : Disable
WS5000.(Cfg).Ethernet.[2]>
```

4.4 Set Static IP Information on the Wired LAN Port

Within the **`Ethernet.[2]`** context, use the **`ipaddress`** command to set the static IP address and subnet mask (in that order):

```
WS5000.(Cfg).Ethernet.[2]>ipaddress w.x.y.z 255.d.e.f
```

Next, set the gateway and DNS server addresses:

```
WS5000.(Cfg).Ethernet.[2]>set gateway a.b.c.d
WS5000.(Cfg).Ethernet.[2]>set dns m.n.o.p
```

After each of these commands, information about the context is displayed. Check the IP address settings to make sure they're correct.

At this point, the initial configuration of the WS5100 is complete. Continue the configuration through the switch's Web-based applet interface, as described in the next section.

5 Further Configuration through the Quick Start View

To complete the initial configuration of the WS5100, use the **Quick Start View**. The Quick Start View is part of the **WS5000 Series** applet, a Web-based tool that lets you configure your WS5100 switch through an intuitive graphical interface. The Quick Start View portion of the applet is designed to take a factory-fresh switch and bring it up to a minimal working configuration. For advanced switch configuration, refer to the ***WS5000 Series System Reference***, which you'll find on the product CD.

Using the instructions below, create a WLAN policy and a security policy. You'll then apply these policies to the WS5100 switch policy. After you've created and applied the policies, you should be able to adopt and communicate with properly configured mobile units, as described in "**Verifying the Configuration**" on page 22.

5.1 Applet Requirements

The WS5000 Series applet is accessed through Internet Explorer version 5.5 using the SUN JRE (Java Runtime Environment) 1.4.2_04. (Later versions of IE and the SUN JRE are also supported.) A copy of the SUN JRE is provided with your WS5100 product CD. To install the JRE, insert the CD, wait for the Flash menu to appear, and then select **Install the SUN JRE**.

To prepare Internet Explorer to run the **WS5000 Series** applet:

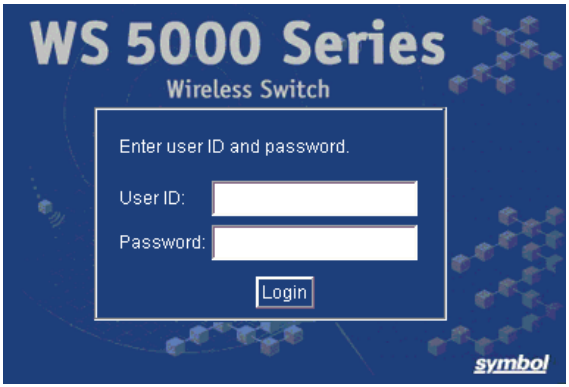
1. Open IE's **Tools > Internet Options** panel and select the **Advanced** tab.
2. Uncheck the following checkboxes:
   - **Use HTTP 1.1**
   - **Java console enabled (requires restart)**
   - **Java logging enabled**
   - **JIT compiler for virtual enabled (requires restart)**

5.2 Launching the Quick Start View

To use the Quick Start View, launch a Web browser on a computer that can access your WS5100.

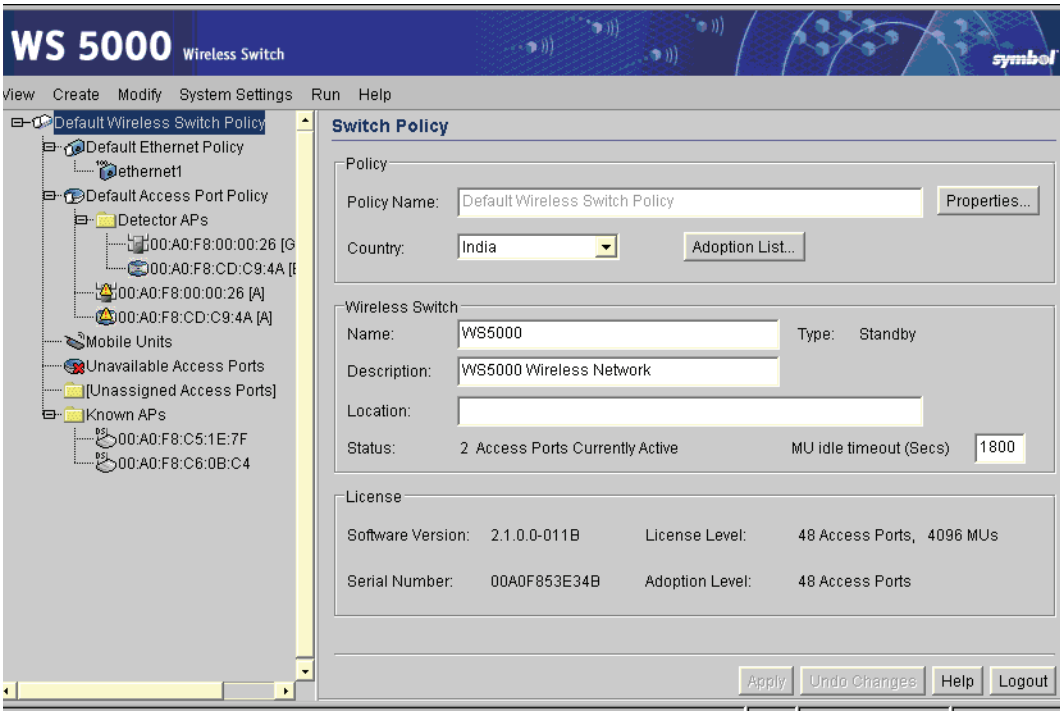
1. Point the browser to the IP address you assigned to the wired Ethernet port (port 2) in "**Set Static IP Information on the Wired LAN Port**" on page 12. Specify a secure connection using the **`https://`** protocol.

   The WS5000 login screen displays:

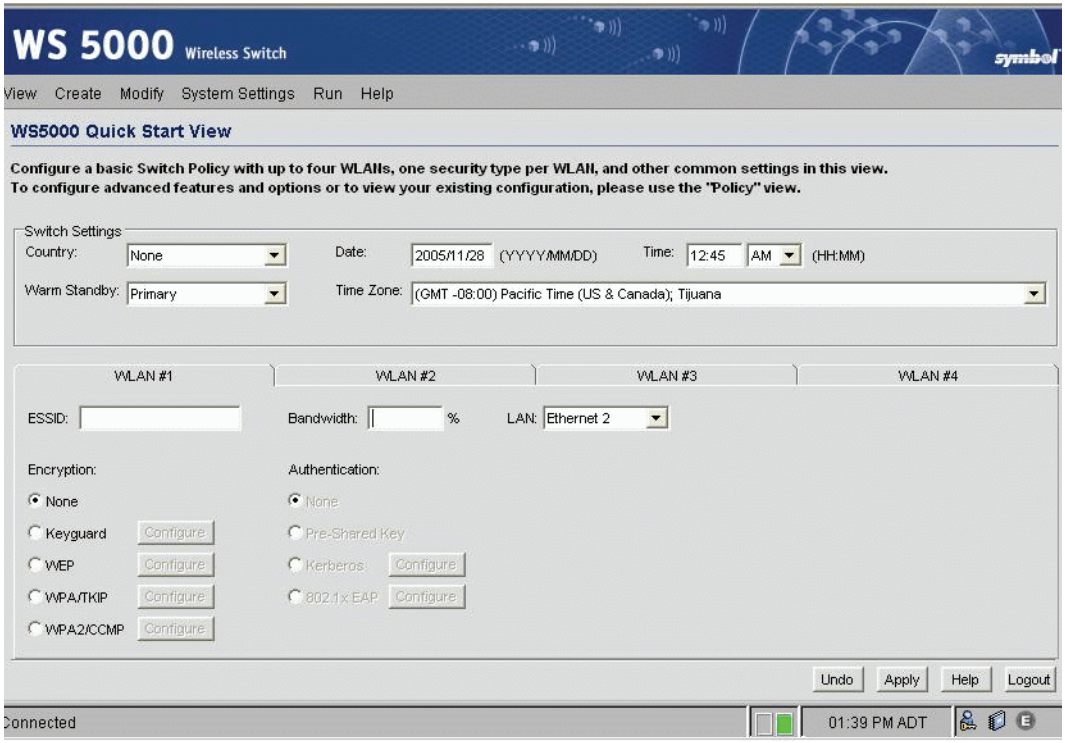


2. Enter the User ID **`admin`**, and Password **`symbol`**. Both are case-sensitive.

3. Click **Login**. The **WS5000 Switch Policy** window appears.



4. From the main menu, select **View** > **Quick Start**. The **WS5000 Quick Start View** window appears. Use this window to create the WLAN policy and apply it to the WS5100.



5. In the **Switch Settings** form, set the **Country** to the country the switch is operating in, leave **Warm Standby** as **Primary**, and set the various date and time parameters.

Switch Settings
Country: None
Date: 2005/11/28 (YYYY/MM/DD)
Time: 12:45 AM (HH:MM)
Warm Standby: Primary
Time Zone: (GMT -08:00) Pacific Time (US & Canada); Tijuana

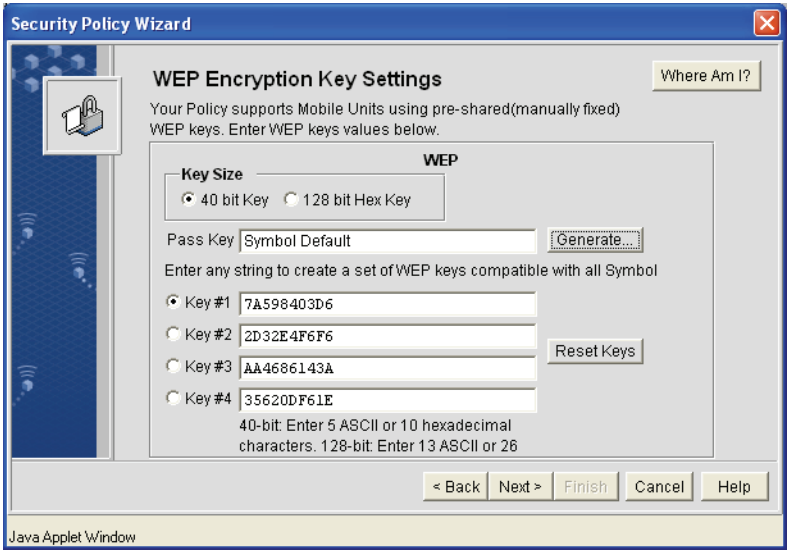
CAUTION The switch can't adopt access ports until the country code is set. Failure to set the proper country could violate regulatory laws.

6. In the **WLAN #1** form (in the lower half of the window), set the **ESSID** to a unique value (**MyWLAN** in the example), set the **Bandwidth** to **100** and set the **LAN** to **Ethernet 1**.

Make a note of the ESSID value, you'll need it later when you verify the configuration.

7. In the lower part of the **WLAN #1** form, set **Encryption**: to **WEP**, set **Authentication:** to **Pre-Shared Key**.

8. Click the **Configure** button next to the **WEP** radio button. The **WEP Encryption Key Settings** dialogue panel is displayed.



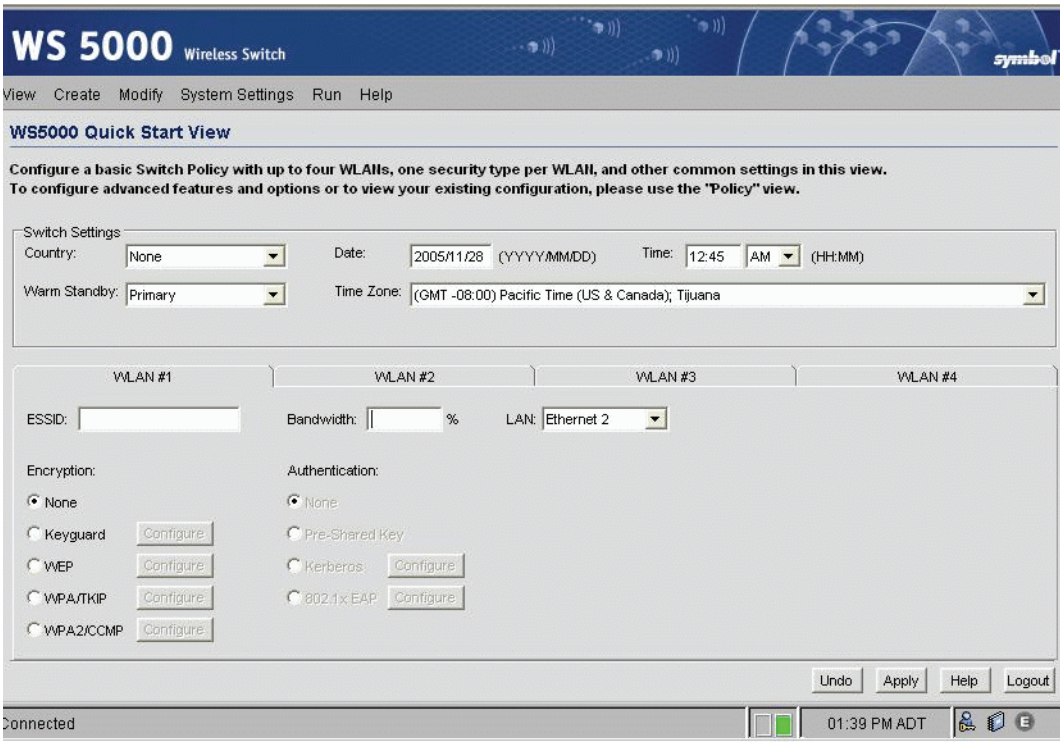
9. Select the Key Size. This can be either a 40bit key or 128 bit hex key. Once you have

CAUTION Don't use the values shown in the illustration.

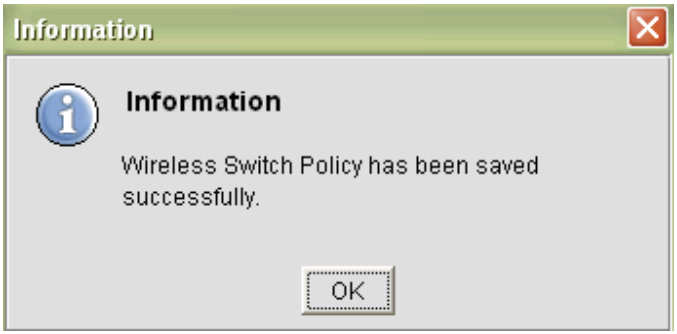
selected the key size, enter the **Pass Key**. The Pass key should have a minimum of 4 characters. Click the Generate button to generate the **4 Key # feilds.**

10. After you've recorded your key values, click **Save** at the bottom of the dialogue.

11. Back in the **WS5000 Quick Start View**, click **Apply** to save the configuration.



12. An information panel appears; click **OK**.

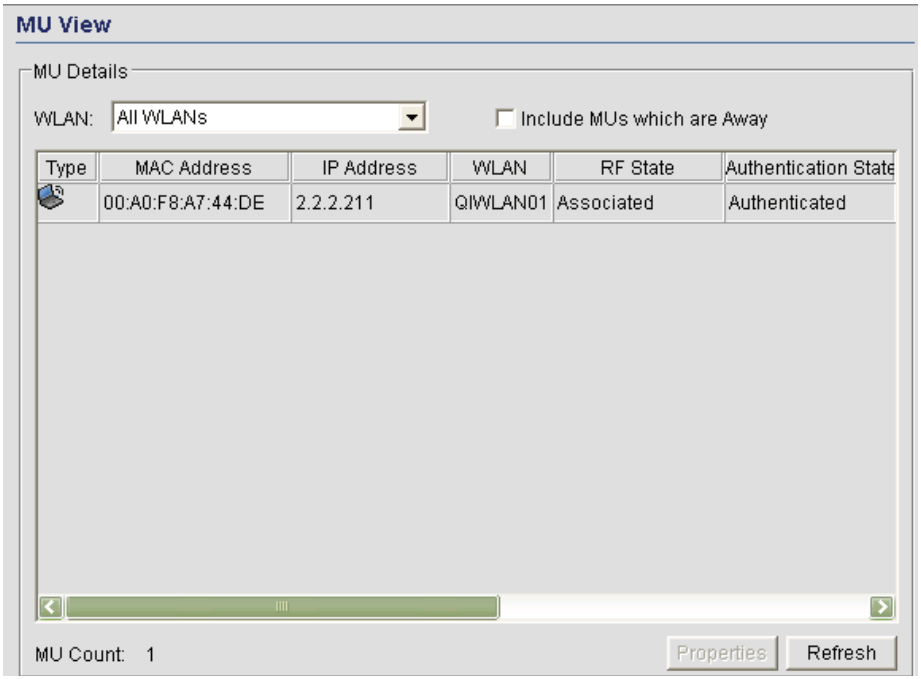


NOTE Your new configuration is not displayed in the **Quick Start View**. To view the policy you just created, you have to go to the **View > Policy** window. The policy is given a default name that corresponds to WLAN #1.

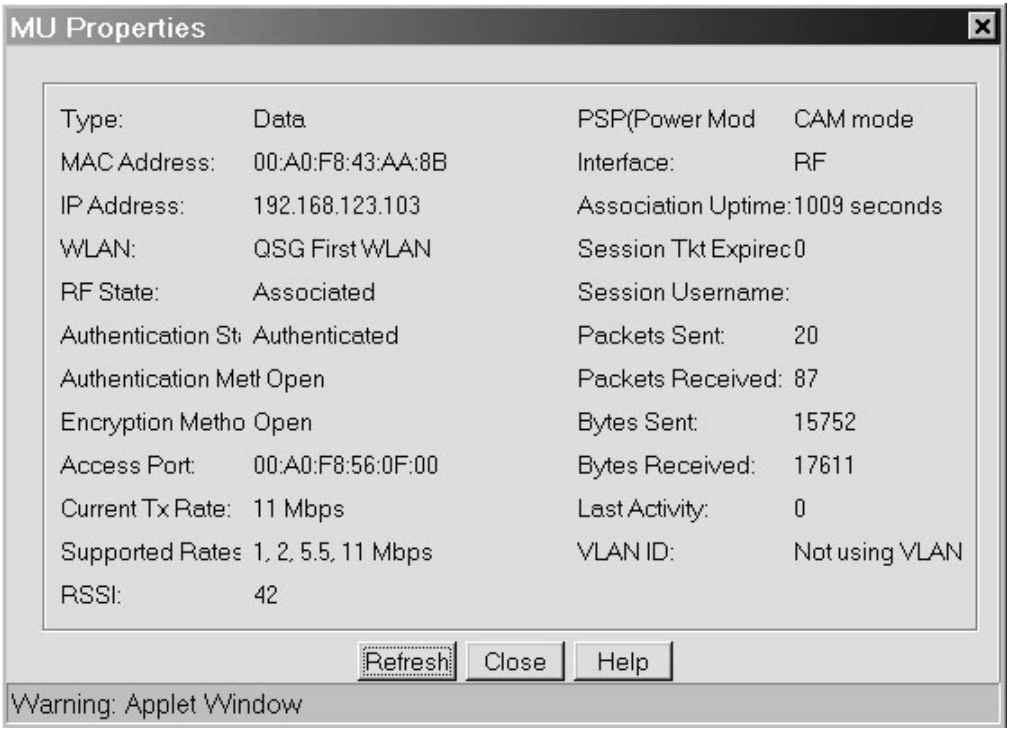
6 Verifying the Configuration

The surest way to verify your WLAN configuration is valid and that the switch is fully operational, is to associate a mobile unit (MU) and confirm that the MU can communicate with a device on the wired LAN. Follow these steps:

1. Deploy the WS5100 into the wired and wireless networks by connecting the Ethernet cables as described in "**Adding the WS5100 to the Network**" on page 6.
2. Identify, by IP address or host name, a computer the WS5100 can communicate with over the wired LAN. This is the device the MU will try to communicate with later in these instructions.
3. Make sure an access port has been adopted by the WS5100.
4. Configure the MU with the same ESSID (**MyWLAN**) and WEP encryption settings that you used in the Quick Start View configuration.
5. After you've configured the MU, verify that it has been associated by the returning to the **Policy View** screen and clicking **Mobile Units**. The **MU View** should have an entry that identifies your mobile unit and shows the **RF State** as **Associated**. If it doesn't, check the ESSID and encryption settings are properly set on the MU.



6. If you want more information, select the mobile unit and click **Properties**. The **MU Properties** dialogue displays everything the switch knows about your mobile unit.



7. Finally, verify the WS5100 is fully operational on both sides of the network (wired and wireless) by pinging the device on the wired LAN from the MU. If the wired device responds, the switch is working. If it doesn't respond, make sure the wired device is on, it's on the proper LAN, and you're pinging the correct IP address or host name.

7 Shutting Down the WS5100

To gracefully shutdown the WS5100, issue the **`shutdown`** command from the **`configure`** context in the CLI:

```
WS5000.(Cfg)> shutdown
This command will halt the system.
A manual power cycle will be required to re-start the switch.
Do you want to proceed (yes/no) : yes

System shut down might take a few mins....
Shutting down the switch...
Shutting down dhcp daemon.. done
Shutting down apache server in the OPEN mode...done.
Shutting down cell controller........ done
Shutting down snmpd agent...done.
Shutting down Postgres....done.
INIT: Sending processes the TERM signal
Hostname: WS5000.symbol.com.
Shutting down PacketSwitch interface  .....
Shutting down dhcp daemon.. done
Shutting down apache server in the OPEN mode...done.
Cell controller not running.
i2c-core: Device or resource busy
Shutting down Postgres....done.
Stopping periodic command scheduler: cron.
Stopping internet superserver: inetd.
Saving random seed... done.
Stopping deferred execution scheduler: atd.
Stopping kernel log daemon: klogd.
Stopping system log daemon: syslogd.
flushing ide devices: hda
System halted.
```

As directed, wait 10 seconds and turn off the device by toggling the power switch.

WARNING! An improper shutdown can render the WS5100 inoperable such that it may require service by Symbol Support. Please do not remove AC power or turn off the WS5100 (by toggling the on/off switch on the back of the device) without first following the shutdown procedure outlined above. An abrupt loss of power can corrupt the information that's stored on the device.

8 Additional CLI Information

8.1 CLI Contexts

At each step of the configuration, you'll be asked to invoke CLI commands within a particular "context." To enter the main "configuration" context, type **`configure`** at the top-level CLI prompt. The prompt changes when you change contexts:

```
ws5000> configure
ws5000.(Cfg)>
```

All of the contexts in the following instructions are "subcontexts" of the **`configure`** context. For example, to get to the WLAN context you would type **`wlan`** within the **`configure`** context:

```
ws5000.(Cfg)> wlan
ws5000.(Cfg).WLAN>
```

As a shortcut, jump directly to a configuration subcontext through the "**`configure` *`subcontext`***" command:

```
ws5000> configure wlan
ws5000.(Cfg).WLAN>
```

As a further shortcut, the CLI performs silent auto-completion of unambiguous commands. As an example, "**`conf`**" is a sufficient abbreviation for "**`configure`**". If you enter an abbreviated command that isn't unambiguous (i.e. that can resolve to more than one command), you'll be presented with a list of command completions.

NOTE All CLI commands are case-insensitive. All user-created data (the name you give a policy that you create, for example) is case-sensitive.

8.2 Common CLI Commands

Within any context, you can:

- List all the available commands by typing **`help`** or **`?`**
- Show the current configuration settings by typing **`show`**.
- Bump up one configuration context level by typing **`..`** (two periods).
- Get back to the top-level context by typing "**`exit`**".

9 Regulatory Information

WARNING! This regulatory section applies only to the WS5100 device (WS-5100-Rxx-xxx-WR). For more details refer to "Part Numbers, Support, and Sales". All Symbol devices are designed to be compliant with rules and regulations of locations they are sold in and are labeled as required.

Any changes or modifications to Symbol Technologies equipment that are not expressly approved by Symbol Technologies are possibly unsafe and could render the equipment inoperable.

CAUTION This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Radio Frequency Interference Requirements - USA

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Radio Frequency Interference Requirements - Canada

This Class A digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Marking and European Economic Area (EEA)

Statement of Compliance

Symbol Technologies, Inc., hereby declares that this device is in compliance with all the applicable Directives, 89/336/EEC, 73/23/EEC. A Declaration of Conformity may be obtained from:

http://www2.symbol.com/doc/

10 Part Numbers, Support, and Sales

Part Numbers

Description	Part Number
6-port WS5100 Wireless Switch	WS-5100-R210-06-WR
12-port WS5100 Wireless Switch	WS-5100-R210-12-WR
18-port WS5100 Wireless Switch	WS-5100-R210-18-WR
24-port WS5100 Wireless Switch	WS-5100-R210-24-WR
30-port WS5100 Wireless Switch	WS-5100-R210-30-WR
36-port WS5100 Wireless Switch	WS-5100-R210-36-WR
42-port WS5100 Wireless Switch	WS-5100-R210-42-WR
48-port WS5100 Wireless Switch	WS-5100-R210-48-WR
Redundant WS5100 Wireless Switch	WS-5100-R210-RS-WR
6-port Upgrade	WS-5100-UC-WW

Symbol Support Center

Use the **Symbol Support Center** as the primary contact for any technical problem, question, or support issue involving Symbol products. Symbol Support Center responds to calls by email, telephone or fax within the time limits set forth in individual contractual agreements:

Telephone (North America): 1-800-653-5350
Telephone (International): +1-631-738-6213
Fax: (631) 738-5410
Email: **support@symbol.com**

When contacting Symbol Support Center, please provide the following information:

- Serial number of the unit (this is the same as the MAC of NIC 1).
- Model number or product name.
- Software type and version number.

Customer Support Web Sites

Comprehensive on-line support is available at the **MySymbolCare** Web site. Registration is free and a variety of services can be linked through this Web portal.

MySymbolCare for RMA Requests: http://www.symbol.com/services/msc/msc.html
Symbol Services Homepage: http://www.symbol.com/services
Symbol Software Updates: http://www.symbol.com/services/downloads
Symbol Developer Program Web Site: http://devzone.symbol.com

Product Sales and Product Information

North America	International
Symbol Technologies, Inc. One Symbol Plaza Holtsville, New York 11742-1300 Tel: 1-631-738-2400 or 1-800-722-6234 Fax: 1-631-738-5990	Symbol Technologies, Inc. Symbol Place Winnersh Triangle, Berkshire, RG41 5TP United Kingdom Tel: 0800-328-2424 (Inside UK) +44 118 945 7529 (Outside UK)

Other Sales Offices

For other sales offices visit the **Symbol Services** Web site:

http://www.symbol.com/services/howto/howto_contact_us.html

General Information

For general information, contact Symbol at:

Telephone (North America): 1-800-722-6234
Telephone (International): +1-631-738-5200
Website: http://www.symbol.com

CAUTION This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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Holtsville, New York 11742-1300
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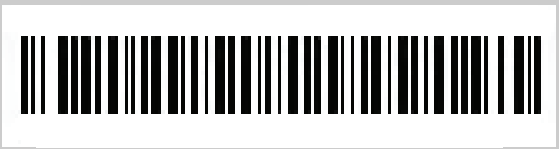

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